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09/719,960	06/14/2001	Peter Hagerlid	A33846-PCT-	5244
7590	04/21/2006		EXAMINER	
Janet M MacLeod Dorsey & Whitney LLP 250 Park Avenue New York, NY 10177			SISSON, BRADLEY L	
			ART UNIT	PAPER NUMBER
			1634	

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**APR 21 2006**  
**GROUP 1600**

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/719,960  
Filing Date: June 14, 2001  
Appellant(s): HAGERLID ET AL.

\_\_\_\_\_  
Janet M. MacLeod, Reg. No. 35,263  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 07 February 2006 appealing from the Office action mailed 18 February 2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The amendment after final rejection filed on 10 November 2005 has been entered.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,874,219	RAVA et al.	2-1999
5,556,961	FOOTE et al.	9-1996

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### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 23, 24, 27-35, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,874,219 (Rava et al.) in view of US Patent 5,556,961 (Foote et al.).

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Rava et al., disclose an apparatus comprising of an array of test sites on a chip (applicant's plate) and which further comprises an array of pixels of a CCD, which in turn detects signals resulting from a chemical reaction. Rava et al., teach explicitly of using this system for the analysis of nucleic acid sequences.

Column 6, first paragraph, teaches that the apparatus can comprise temperature controls, which speaks to heating and cooling elements being present. Said apparatus also has focusing means as well as means for collecting and processing data.

Column 6, third full paragraph, provides guidance as to how many pixels one would need in a CCD given the number of test sites on the plate so that a signal resulting at a given test site would be detected and the data recorded. Rava et al., teaches that 300 x 300 pixels can be assigned where the probes are in an array of 50 x 50 (2,500) probes, and that as such, the device of Rava et al., allows for the simultaneous determining of the light intensity of each of said predetermined regions, where the "predetermined region" is the location of a probe in an array. Such a showing meets the limitation of claim 31 where one is using a "frame transfer charge-coupled device." Also disclosed in said paragraph is the use of a laser as well as confocal techniques. Such means require the use of "lenses" and an "optically sensitive transducer;" limitations of claim 28 and 30.

Rava et al., column 6, fourth paragraph, teaches explicitly is using imaging means whereby one can "simultaneously" image a strip of the array. Such a showing meets yet another limitation of claim 23.

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Rava et al., column 6, teaches that the array of biological probes may form a biological chip, and that the array may be placed in a well, such as that found in a microtiter plate, thereby forming a “biological chip plate.”

Rava et al., Figure 2, depicts an apparatus configured such that the reaction sites are monitored from underneath. Such a showing meets a limitation of claim 27.

Rava et al., column 9, teaches that the placement and arrangement of probe arrays in wells can be varied upon the particular needs to the ordinary artisan.

Rava et al., do not teach incorporating a “mask” between the elements or spots of the array, however, they do teach at column 8, fourth paragraph, of having material resistant to the flow of a liquid surrounding each probe array.

Foote et al., column 3, last paragraph, teaches explicitly of the device/apparatus comprising “‘permanently’ blocked areas of the substrate” and that these areas constitute a “‘primary mask’ that separates and defines the borders of the cells to which biomonomers and biopolymers are attached.”

Foote et al., column 3, last paragraph, and column 4, last paragraph, teaches that the reaction sites, or cells, and their reagents, are arranged in the form of an array.

Foote et al., column 3, provides motivation in incorporating a mask around each of the elements of an array where at column 3, last paragraph, they teach, “This substantially prevents the background and boundary effects which result from the use of substrates uniformly derivatized with linkers and from the use of photolithographic masks which allow contact between neighboring cells or in which the borders of the individual cells are defined by multiple masking steps.”

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In view of the combined teachings of the prior art of record, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the use of a permanent mask as disclosed by Foote et al., with the device of Rava et al., for three reasons provided by Foote et al., *id est*, the use of a permanent mask, as contrasted with the presence of no mask or simply a mask surround the array “substantially prevents the background and boundary effects which result from the use of substrates uniformly derivatized with linkers and from the use of photolithographic masks which allow contact between neighboring cells or in which the borders of the individual cells are defined by multiple masking steps.”

In view of the detailed teachings of the prior art of record, the motivation provided, said ordinary artisan would have been highly motivated to have incorporated such technologies, and had a most reasonable expectation of success. Therefore, and in the absence of convincing evidence to the contrary, the Board of Appeals is asked to affirm the preceding rejection.

#### **(10) Response to Argument**

At page 11 of the Brief agreement is reached in that Rava et al., do not teach the presence of a mask between the wells or sites of the array. It is further noted, that Rava et al., does teach the use of a mask that surrounds the array, *supra*.

Appellant's representative asserts at page 11, bridging to page 13 that the mask of Foote et al., does not become incorporated into the array, directing attention to Figure 2, and column 12.

The above argument is not persuasive, as appellant's representative is not taking the reference as a whole. In particular, Foote et al., column 3, last paragraph, teaches explicitly of

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there being a “primary mask” that comprises a “permanently’ blocked area.” Appellant’s representative acknowledges this at page 14, first full paragraph, of the Brief, but disregards the explicit statements provided by Foote et al., as not constituting a “mask,” which is in opposition to the very terminology used by Foote et al., to describe this element of the apparatus.

At page 14-16 of the Brief argument is presented that Foote et al., does not provide motivation whereby the mask disclosed therein would or could be used in the apparatus of Rava et al.

The above argument has been fully considered and has not been found persuasive for as presented above, Foote et al., column 3, provides motivation in incorporating a mask around each of the elements of an array where at column 3, last paragraph, they teach, “This substantially prevents the background and boundary effects which result from the use of substrates uniformly derivatized with linkers and from the use of photolithographic masks which allow contact between neighboring cells or in which the borders of the individual cells are defined by multiple masking steps.”

At page 15, bridging to page 16 of the Brief argument is presented that Rava et al., teaches away from the use of a masking means in an apparatus that utilizes optical detection.

The above argument is not supported by a careful reading of the prior art. It is noted with particularity that Rava et al. does teach using a masking means. Support for this position is found at Rava et al., column 8, fourth paragraph, of having material resistant to the flow of a liquid surrounding each probe array. Accordingly, and in stark contrast to appellant’s position, the use of a mask with the invention of Rava et al., is disclosed in various embodiments, and the



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inclusion of the masking means of Foote et al., would be a logical progression, especially given the motivation as provided by Foote et al.

At page 17 of the Brief argument is presented that “neither reference teaches nor suggests the element of an array of lenses between the reaction sites and the optically sensitive transducer.”

As an initial matter, it is noted that this is a limitation of claims 28 and 29 only. It is noted with particularity that Rava et al., disclose various embodiments of their apparatus, some of which do not involve an array of lenses. However, it is noted that Rava et al., column 6, fifth paragraph, teaches using “confocal techniques” to bring the emission onto a linear array of light detectors (appellant’s “optically sensitive transducer”). The aspect of using “confocal techniques” is considered to reasonably suggest the use of lenses that are arranged between, or arranged in use between, the reaction sites and the optically sensitive transducer.

It is further noted that the apparatus of Rava et al., may also employ a fiber optic bundle that also directs and focuses the light onto the array of optically sensitive transducers. The aspect of using fiber optics is also considered to meet the limitation of using a lens, as the fiber is able to focus the light onto the optically sensitive transducer. Also, the aspect of bundling the fiber optics speaks directly to the fibers occupying “a smaller space ... than the spacing of the corresponding reaction sites.”

For the above reasons, and in the absence of convincing evidence to the contrary, the rejection of claims 23, 24, 27-35, 37-39, and 46 under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,874,219 (Rava et al.) in view of US Patent 5,556,961 (Foote et al.) should be affirmed.

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**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Bradley L. Sisson

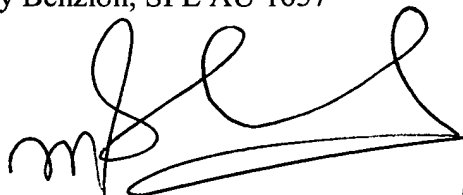


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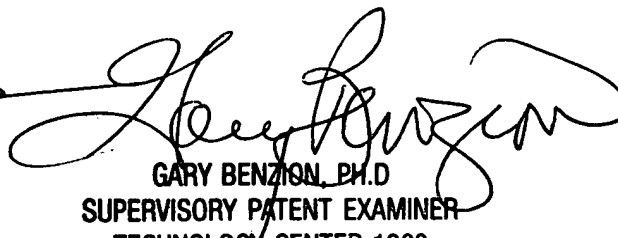
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